

REMARKS

Claims 1 to 23 are pending in this application, of which claims 1, 7, 10 and 17 are the independent claims. Favorable reconsideration and further examination are respectfully requested.

Claims 1 to 3 and 9 were rejected under 35 U.S.C. §102(b) over U.S. Patent Application Publication No. 2002/0043686 (Bolam); claims 4 to 6, 8, 10 to 12, 14 to 15, 17 to 19, 21, and 22 were rejected under §103(a) over Bolam; claims 13 and 20 were rejected under §103 over Bolam in view of U.S. Patent No. 4,534,816 (Chen); and claims 16 and 23 were rejected under §103 over Bolam in view of U.S. Patent No. 6,251,782 (Lee).

Initially, Applicants note that the Office Action failed to address the arguments in the Amendment of August 6, 2004. Instead, the Office Action merely implies that the previous claim amendments are product-by-process limitations and, therefore, are not given patentable weight. Applicants respectfully disagree with this characterization of the amendments.

More specifically, the August 6th Amendment changed claim 1 to state that the device is grounded by the conductive connector to prevent charge during a processing step. Mere recitation of a processing step does not make this a product-by-process limitation. The standard feature required by claim 1 is that the device is grounded by the conductive connector. This was not addressed in the Office Action, nor was the resulting effect of this feature, which was also claimed, addressed. The remaining claims include similar limitations. Since the above claim amendments are not product-by-process limitations, consideration thereof is deemed proper, and therefore is respectfully requested.

Notwithstanding the foregoing, and solely to advance prosecution, Applicants have further amended the claims to clarify the difference between Applicants' invention and the prior art. In view of the amendments and remarks, withdrawal of the art rejections is respectfully requested.

Amended independent claim 1 is directed to a tiedown structure. The tiedown structure includes a semiconductor substrate having a chip formed thereon. The chip includes an electrical device. The tiedown structure also includes a kerf region proximate the chip and a conductive connector that forms an electrical connection between the chip and the kerf region. The device is grounded by the conductive connector to prevent charge overloading of the device during a processing step. The conductive conductor includes at least a conductor line and two metal plugs substantially covered by the conductor line.

As shown above, Applicants have amended claim 1 to include the feature that the conductive conductor comprises at least a conductor line and two metal plugs substantially covered by the conductor line. The applied art is not understood to disclose or suggest these features of claim 1.

More specifically, Bolam is directed to an silicon-on-insulator (SOI) chip having an isolation barrier to prevent the diffusion of impurities into active regions of the chip. In this regard, Bolam describes using a diffusion protect layer 202 for passivating the edges of SOI chips in order to prevent the diffusion of mobile ions (*see* pg. 4, para. 0051-0052). Bolam expressly states that the diffusion protect layer is "a metal film" (pg. 4, para. 0051). Nowhere does Bolam disclose or suggest a conductive conductor that includes a conductor line and two

metal plugs covered with the conductor line, as in Applicants' claim 1. For at least these reasons, Applicants respectfully submit that claim 1 is patentable over Bolam.

Claim 7, as amended, is directed to a tiedown structure. The structure includes a semiconductor substrate that has a chip formed thereon. The chip includes an electrical device. The tiedown structure also includes an edge seal along an outer perimeter of the chip and a conductive connector that forms an electrical connection between the edge seal and the device, in order to ground the device and to prevent charge overloading of the device during a processing step. The conductive connector includes at least a conductor line and two metal plugs covered with the conductor line.

The applied art is not understood to disclose or suggest the foregoing features of claim 1. In particular, as explained above, Bolam does not disclose or suggest that the conductive conductor comprises at least a conductor line and two metal plugs substantially covered by the conductor line. Accordingly, claim 7 is believed to be allowable.

Claim 10, as amended, is directed to a method for forming a semiconductor structure. The method includes forming a device on a chip, defining a kerf proximate the chip, and forming an electrically conductive connector. The conductive connector connects the device and the kerf for grounding the device during a subsequent processing step. The conductive connector includes at least a conductor line and two metal plugs substantially covered by the conductor line. The method also includes completing fabrication of the chip that includes performing the processing step, and removing an end of the conductive connector from the kerf to reduce short circuits to ground of the device during device operation.

The applied art is not understood to disclose or suggest the foregoing features of claim 1. As explained above, Bolam does not disclose or suggest that the conductive conductor comprises at least a conductor line and two metal plugs covered with the conductor line. Accordingly, claim 10 is believed to be allowable.

Claim 17, as amended, is directed to a method of forming a semiconductor structure. The method includes forming a chip on a semiconductor substrate. The chip includes a device. The method also includes forming an edge seal along an outer perimeter of the chip and forming an electrically conductive connector. The conductive connector connects the edge seal and the device for grounding the device during a processing step. The conductive connector includes at least a conductor line and two metal plugs substantially covered by the conductor line. The method further includes completing fabrication of the chip, which includes performing the processing step, and removing a portion of the conductive connector to reduce short circuits to ground during device operation.

The applied art is not understood to disclose or suggest the foregoing features of claim 1. As explained above, Bolam does not disclose or suggest that the conductive conductor comprises at least a conductor line and two metal plugs covered with the conductor line. Accordingly, claim 17 is believed to be allowable.

Neither Lee, which was cited solely for its disclosure of ion beam milling, nor Chen, which was cited solely for its disclosure of plasma etching, are understood to add anything that would remedy the foregoing deficiencies of Bolam vis-à-vis the claims.

Each of the dependent claims is also believed to define patentable features of the invention. Each dependent claim partakes of the novelty of its corresponding independent claim and, as such, as not been discussed specifically herein.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not been exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of patentability of the claim prior to its amendment.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the application is in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience.

Applicants' undersigned attorney can be reached at the address seen below. All telephone calls should be directed to the undersigned at (617) 368-2158.

Please apply any fees or credits due in this case, which are not already covered by checks, to Deposit Account 06-1050, referencing Attorney Docket No. 13292-009001.

Applicants: Egon Mergenthaler, *et al.*
Serial No. : 10/037,213
Filed : November 9, 2001
Page : 13 of 13

Attorney's Docket No.: 13292-009001
Client Reference No.: P2002,0776 US E

Respectfully submitted,

Date: 11/10/2004

Ruth J. Ma
Ruth J. Ma
Reg. No. 55,414

Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110-2804
Telephone: (617) 542-5070
Facsimile: (617) 542-8906

20958905.doc